



# Supporting FERC SMD: Standards Setting Roles, Goals and Process

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## Panel 1

“Who has a role in standard-setting?”



## Standards Setting Process: Roles to be Defined Based on What Needs to be Standardized

- Goals:
  1. Seamless wholesale power markets which are efficient and reliable.
  2. Shorter software implementation times and lower operating costs for wholesale market systems.
- First goal addressed by FERC Standard Market Design
- Second goal is the reason we need standards at the market rule (spot and bilateral markets), business process/operating procedure and software level.

WHY?

***Because software will both "follow and enable" the rules and business process/operating procedures (these determine the functional requirements to be implemented by the software).***

IN ADDITION...

Standard market rules, standard operating procedures/business processes and software standards are essential to achieve Goal 1.



# What Should Be Standardized in SMD?

**Market Design/Policy**

**Market Rules & ISO Operating Procedures/Bus. Processes**

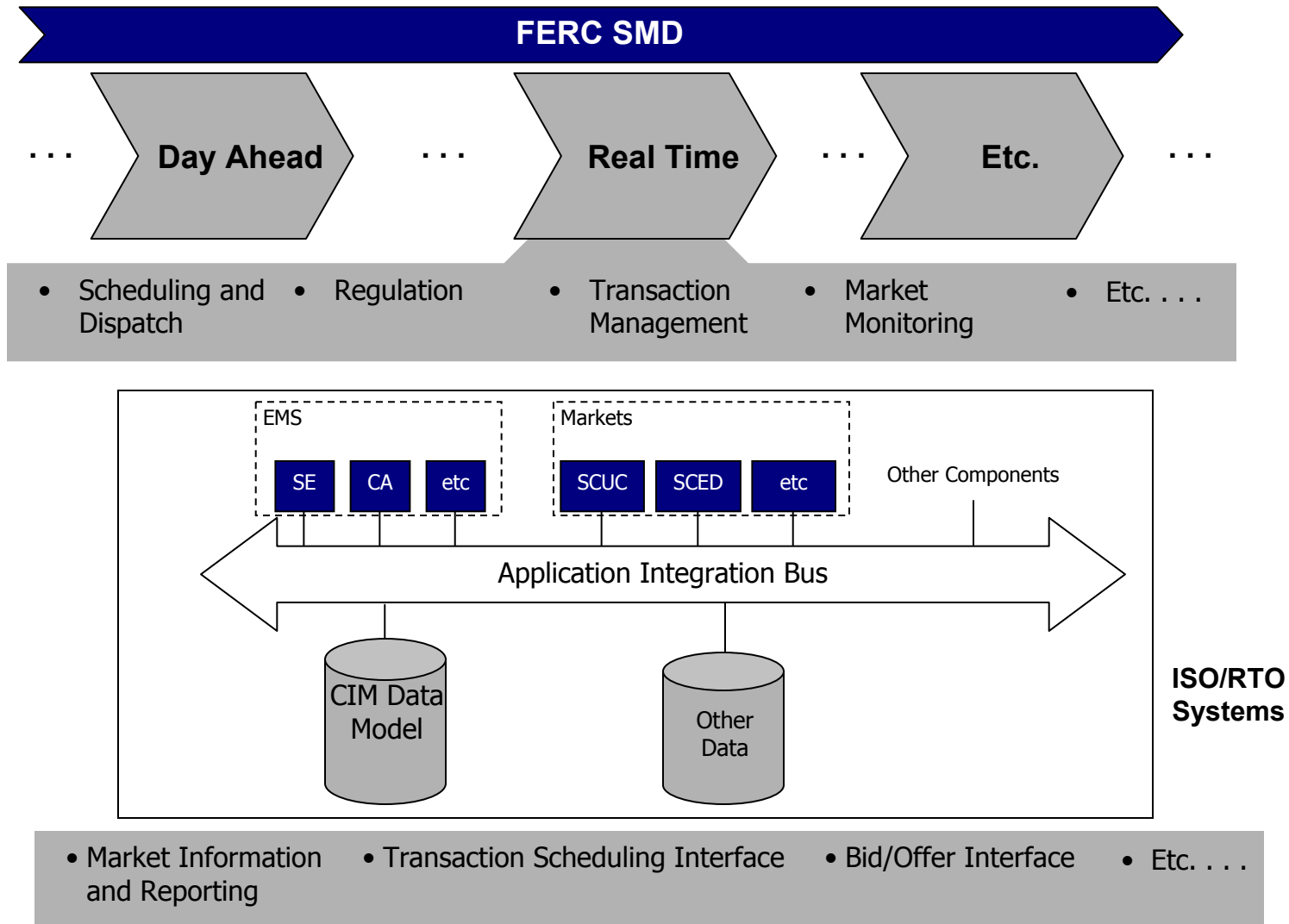
**Functions**

**Components**

**System Architecture**

**Data Architecture**

**Market Interfaces**



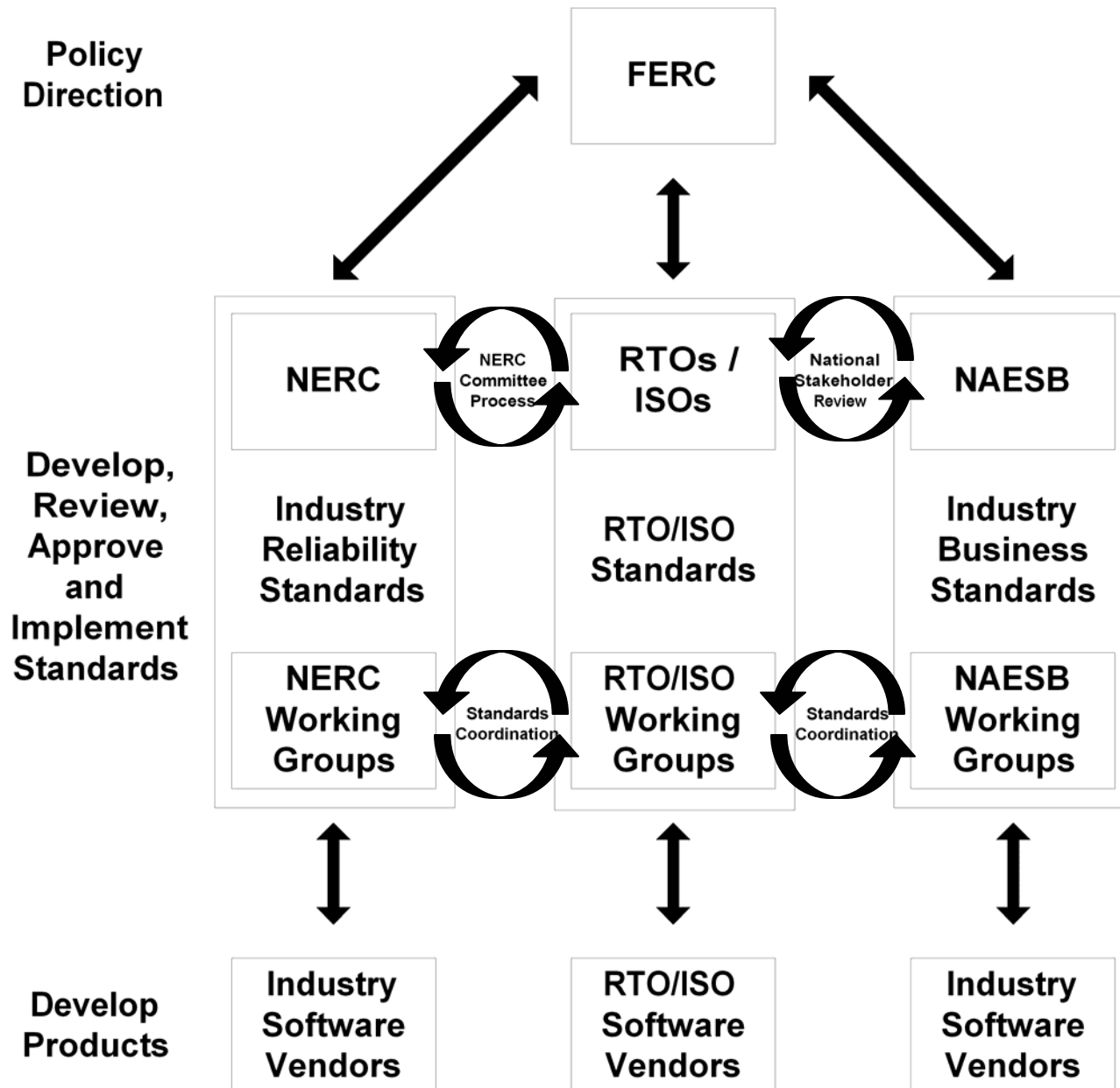


## Defining Responsibilities – Proposed Operational Structure

| Regulatory/<br>Policy                        | FERC<br><i>SMD - Market Design / Policy</i>                                      |  |  |
|--|--|--|--|
| Accountability/<br>Implementation            | NERC<br><i>Reliability</i>   | ISO/RTO<br><i>Market Design/Rules</i>  | NAESB<br><i>Participant Business Practices</i>   |
| <b>Standards</b>                             | <ul style="list-style-type: none"> <li>Reliability Standards</li> </ul>          | <ul style="list-style-type: none"> <li>Wholesale Market Rules &amp; Operating Procedures</li> <li>Software Architecture and Security Standards</li> <li>Market Interfaces</li> <li>ISO/RTO Related Data Interchange</li> </ul> | <ul style="list-style-type: none"> <li>Bilateral Market Standards</li> <li>Market Participant Business Practices/Processes</li> <li>Industry Related Data Interchange</li> </ul> |
| <b>Working Groups/Task Forces</b>            | <ul style="list-style-type: none"> <li>NERC working groups/taskforces</li> </ul> | <ul style="list-style-type: none"> <li>ISO/RTO Organization – Delegation to working groups for specific tasks</li> <li>CIM Market Enhancement</li> </ul>   | <ul style="list-style-type: none"> <li>Working Groups as Required</li> </ul>   |
| <b>Software Product Development</b>          | Industry Software Vendors  | ISO/RTO Software Vendors   | Industry Software Vendors  |
| <b>Systems Implementation Responsibility</b> | <ul style="list-style-type: none"> <li>Reliability Entities</li> </ul>           | <ul style="list-style-type: none"> <li>ISOs/RTOs</li> </ul>  | <ul style="list-style-type: none"> <li>Standards Users</li> </ul>  |



# Standards Setting: A High-Level Process Model



## Panel 3

“Developing the Plan for Wholesale Electric  
Market and Grid Software Consistency”

Panel 3a: Goals

Panel 3b: Process/Plan



# Standardization Goals: Principles and Scope

- Principles:

- Project management of the standardization effort is critical: Direction, scope and funding will determine success
- Must design with multi-vendor involvement and support in mind
- Standards should be in the public domain
- Standards should allow for proprietary enhancements or regional differences (as long as these do not compromise interoperability/predictability of the function or introduce market "seams").

- Initial Scope:

- Standardize core market rules and operating procedures, consistent with FERC SMD
- Define high level architectural functions/components and software architecture (standardization at the functional level)
- Standardize data interchange protocols (internal and external) and data modeling (CIM extension)
- Software security standards

- Longer Term Scope:

- Standardization at the software component/configuration level is possible but may not be practical. (So called "plug and play" between different vendors may not be realistic/cost-effective given the relatively small size of the industry.)
- Benchmarking/testing standards for software components

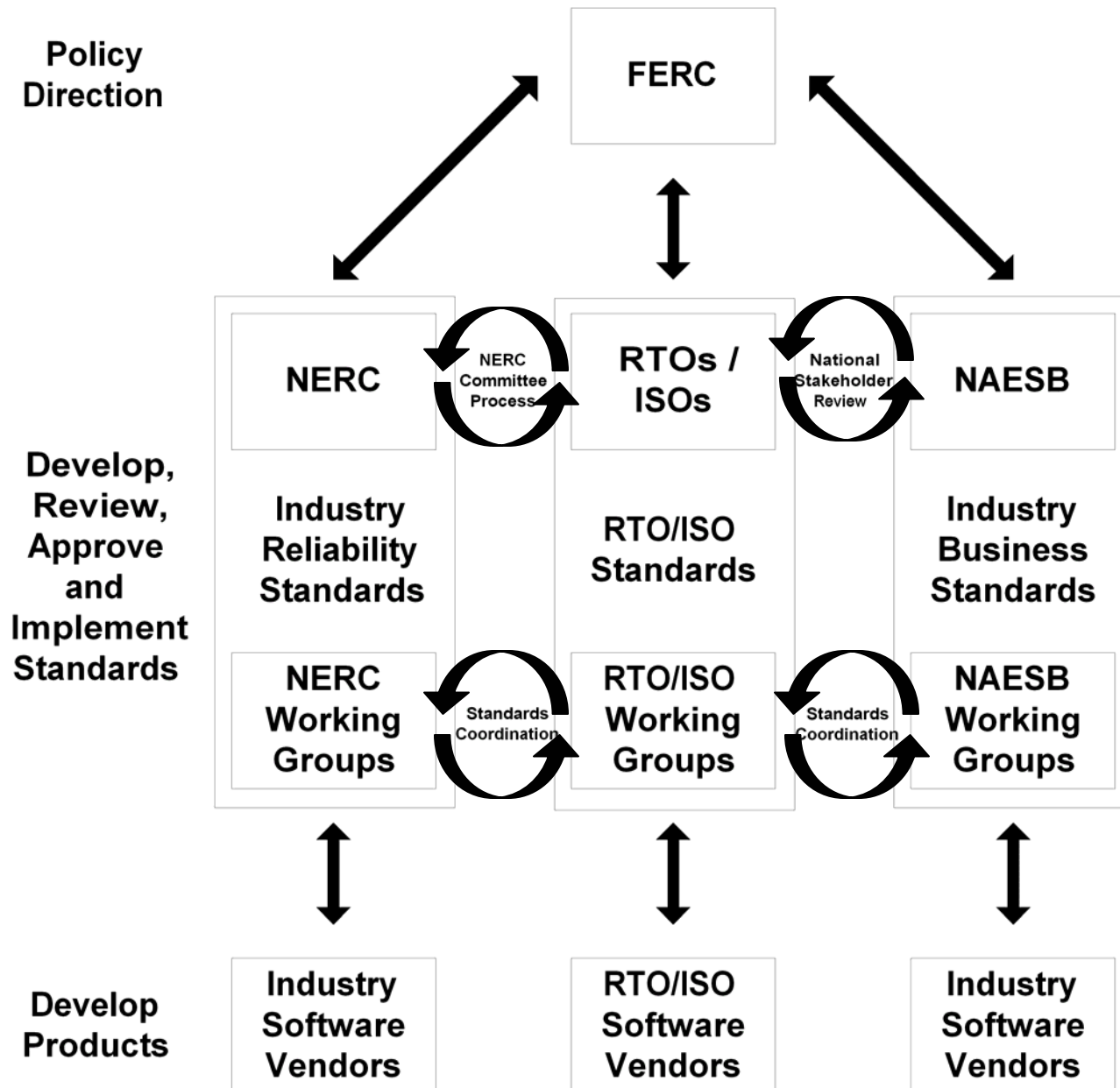


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|--|--|--|--|
| Accountability/<br>Implementation            | NERC<br><i>Reliability</i>   | ISO/RTO<br><i>Market Design/Rules</i>  | NAESB<br><i>Participant Business Practices</i>   |
| <b>Standards</b>                             | <ul style="list-style-type: none"> <li>• Reliability Standards</li> </ul>          | <ul style="list-style-type: none"> <li>• Wholesale Market Rules &amp; Operating Procedures</li> <li>• Software Architecture and Security Standards</li> <li>• Market Interfaces</li> <li>• ISO/RTO Related Data Interchange</li> </ul> | <ul style="list-style-type: none"> <li>• Bilateral Market Standards</li> <li>• Market Participant Business Practices/Processes</li> <li>• Industry Related Data Interchange</li> </ul> |
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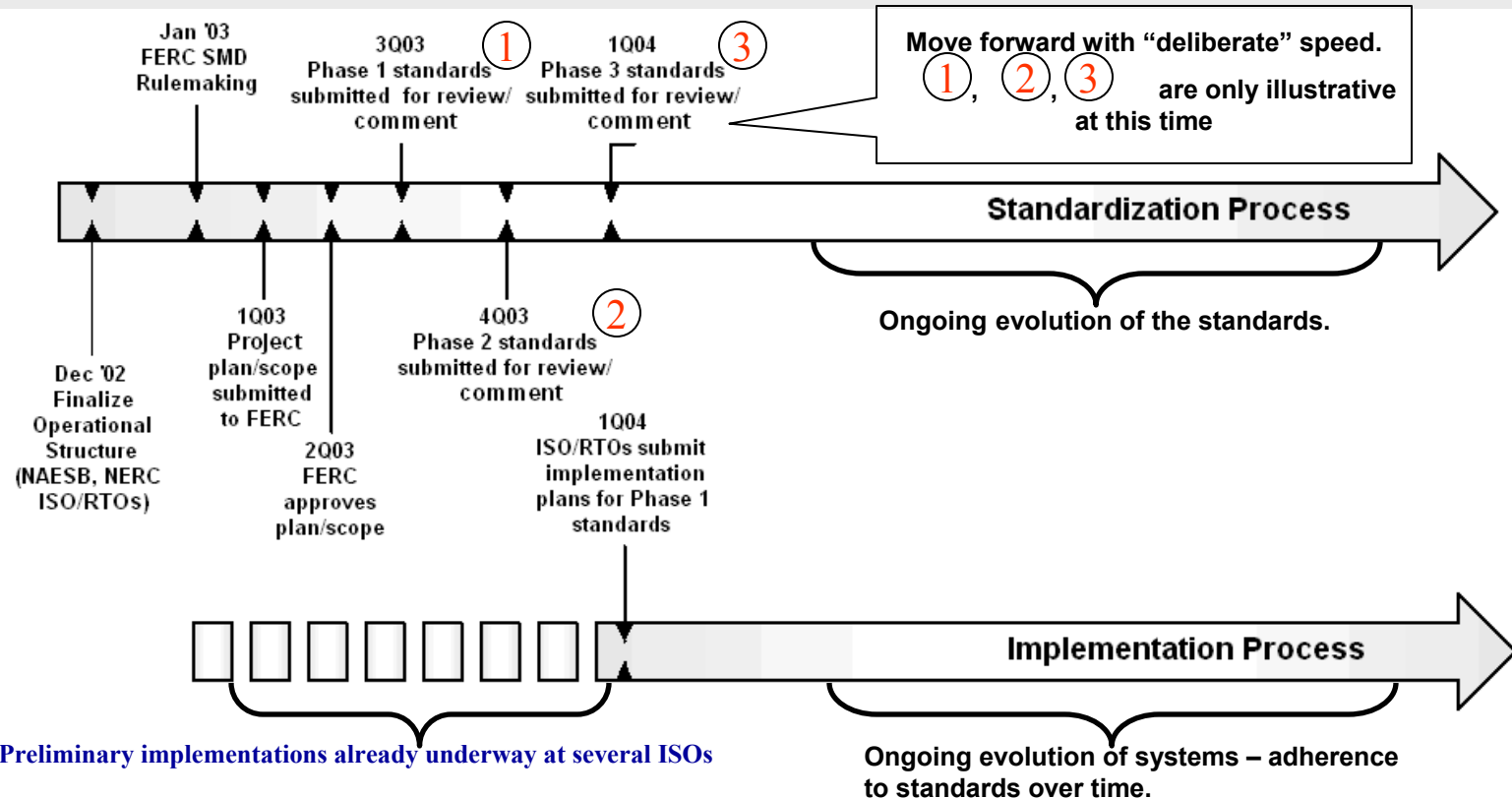


# Standards Setting: A High-Level Process Model





# Standards Setting: A Conceptual Plan for Review/Discussion



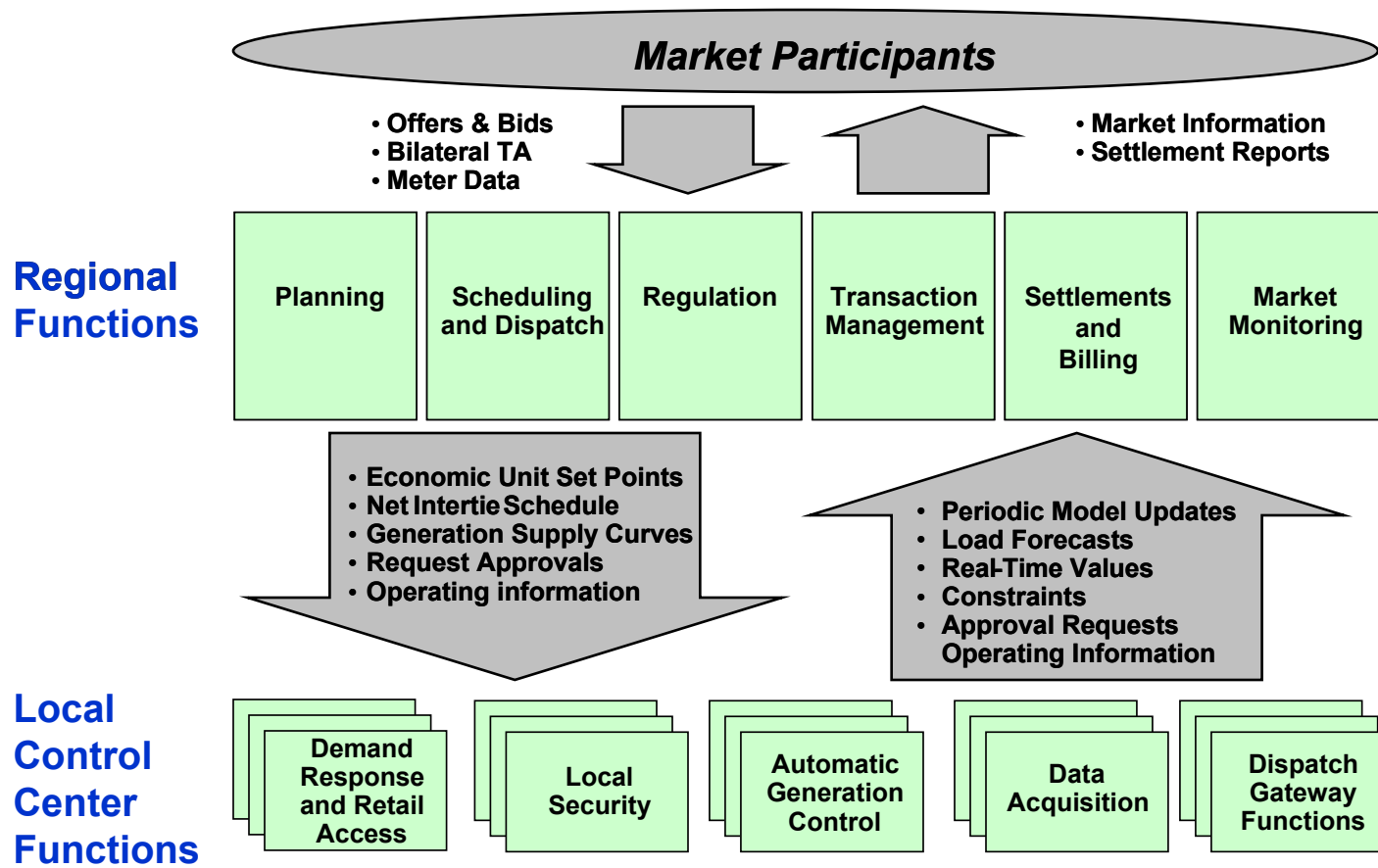
Notes: Divide scope into smaller tasks/phases, for example:

| Task               | Description   | Responsible (Lead Underlined)  |
|--------------------|---|--|
| Phase 1 Standards: | -Wholesale Energy Market Rules & Operating Procedures<br>-CIM Extension Defined<br>-Industry Related Data Interchange Standards Defined | <u>ISO/RTO</u><br><u>ISO/RTO</u> & Vendors<br><u>NAESB</u> , ISO/RTO & Vendors |
| Phase 2 Standards: | -Transaction Schedule Rules/Interface<br>-ISO/RTO Related Data Interchange Standards Defined<br>-Bilateral Market Standards             | <u>ISO/RTO</u> & NAESB<br><u>ISO/RTO</u> & Vendors<br><u>NAESB</u>             |
| Phase 3 Standards: | -Ancillary Services Market Rule & Operating Procedures (Requires Further Development)<br>-Market Participant Practices/Processes        | <u>FERC</u> & ISO/RTO<br><u>NAESB</u>  |

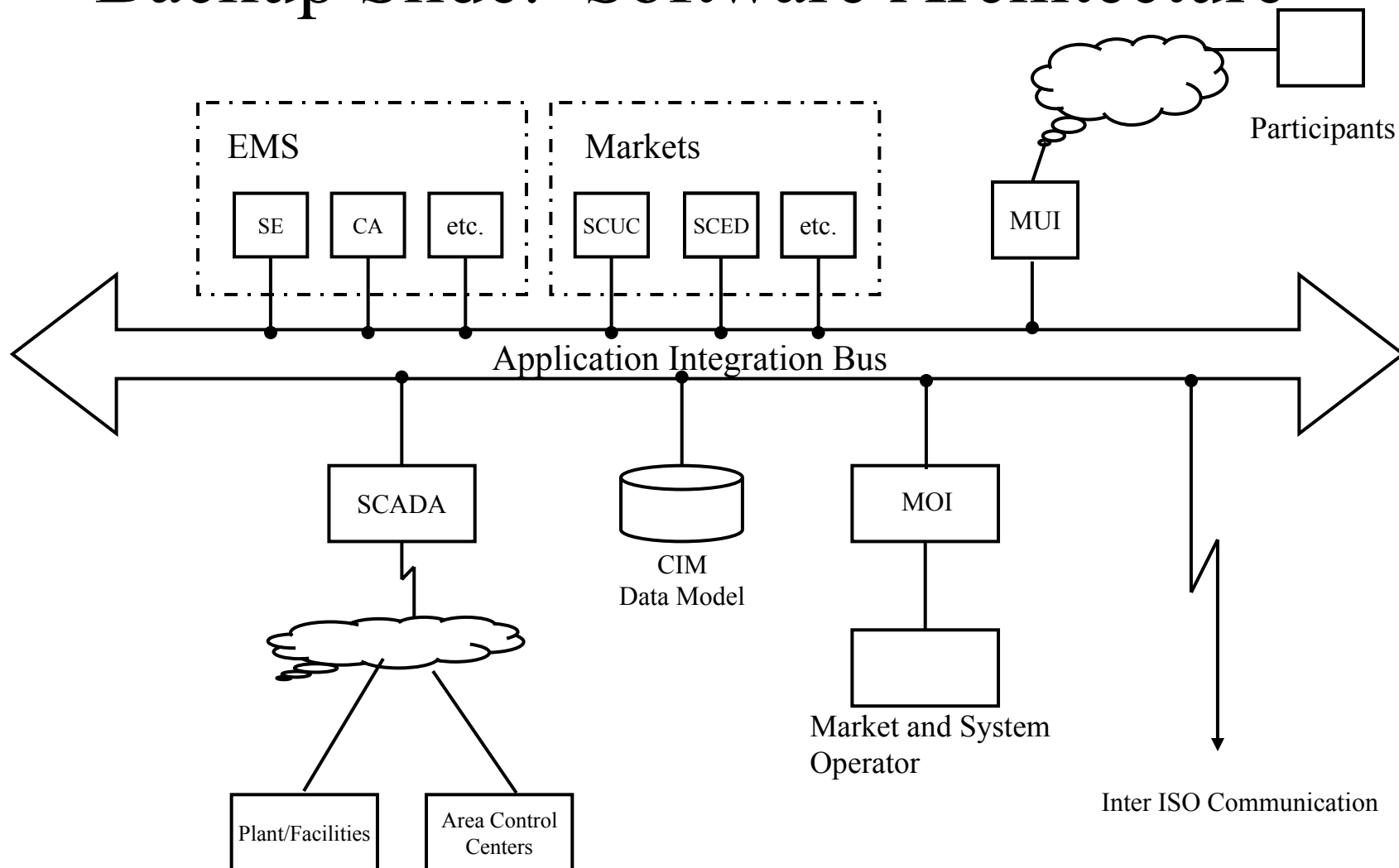


# Backup Details

# Backup Slide: ISO/RTO Functional Model



# Backup Slide: Software Architecture





## Backup Slide: SMD Architectural Components

- CRR Auction
- CRR simultaneous feasibility test/study
- Outage Scheduling
- Load Forecasting
- Electronic Scheduling
- e-Tagging
- OASIS
- Historical Information Storage and Retrieval
- Market Portal for data collection and posting of market clearing results
- Market Monitoring tools
- Security constrained market clearing software; configurable to support day-ahead SCUC and real-time SCED
- Pricing “calculator” configurable to support different pricing mechanisms
- Network Analysis applications composed of State Estimator, Security Analysis, Optimal Power Flow, Topology Processor, Loss Penalty Factor Calculation, Shift Factors and Linearized Transmission Constraints calculations
- Real Time communication (ICCP, Enterprise Integration Bus)
- Support systems and CIM compliant model and data maintenance
- Settlements
- Billing
- Reporting and Publishing

# Backup Slide: Main ISO/RTO Business Streams

Market-Facing  
Capabilities

**Capturing Data**

**Power System  
Planning**

**Forecasting**

**Scheduling**

**Dispatching**

**Operating  
Auctions**

**Settlement**

**Billing**

**Publishing  
Information**

**Monitoring &  
Mitigation**

**Serving  
Customers**

**Managing  
Disputes**

**Analyzing  
Markets**

Supporting  
Capabilities

**Managing the  
Enterprise**

**Managing  
Information  
Technology  
Infrastructure**

**Managing  
Projects/Change**

## Backup Slide: SMD Architecture

